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1. INTRODUCTION

I am William P. Rogerson I am Professor of Economics at Northwestern University, where I am also Co-Director of the Center for the Study of Industrial Organization and Director of the Program in Mathematical Methods in the Social Sciences. I served as Chief Economist at the Federal Communications Commission from June 1, 1998 to May 31, 1999. I have also served on the Faculty of Economics at Stanford University and spent a year visiting the University of Chicago as an Olin Fellow at the Center for the Study of the Economy and State. I served as Chair of the Department of Economics at Northwestern from 1996-1998 and was elected a Fellow of the Econometric Society in 1999 In addition to conducting academic research, I have served as a consultant to a number of government agencies and non-profit organizations, including the Federal Trade Commission, the Institute for Defense Analysis, the Logistics Management Institute, the Office of the Secretary of Defense (Program Analysis and Evaluation), the RAND Corporation, and the U.S. Department of Justice.

I have been asked by Qwest Communications International, Inc. (Qwest) to read and analyze the record created thus far in the Commission's intercarrier compensation proceeding,[2] and to offer my views on the suitability of bill-and-keep as a basis for creating a new unified and efficient intercarrier compensation regime.[3] I conclude that bill-and-keep would promote efficiency and enhance competition, both by rationalizing and unifying existing regulations, and

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[1] My curriculum vitae is attached as an appendix to this Declaration.

[2] This proceeding was initiated by a Notice of Proposed Rulemaking issued by the Commission on April 27, 2001 *Developing a Unified Intercarrier Compensation Regime*, Notice of Proposed Rulemaking, CC Docket No. 01-92, FCC 01-132 (rel. Apr. 27, 2001) (NPRM).

[3] "Bill-and-keep" refers to a regime whereby a carrier recovers its network costs primarily, if not exclusively, from its end users, rather than interconnecting carriers

by allowing the Commission to deregulate termination prices and certain other key prices charged by non-dominant carriers. Such a regime would be superior to one based on calling party's network pays (CPNP). While the main advantages of bill-and-keep would be captured by the basic bill-and-keep regime described by the Commission in its NPRM and the accompanying staff paper by DeGraba,"the proposal outlined by Qwest in its reply comments[2] to modify the basic regime by moving to a division of financial responsibility at the "edge of the network" offers some extra advantages that make it a particularly desirable choice. In this Declaration, I explain the major advantages that a basic bill-and-keep regime offers, the extra advantages that Qwest's "edge of the network" proposal offers, and, finally, why the arguments advanced by opponents of bill-and-keep are incorrect, insignificant, or properly dealt with by simple safeguards and rules.

2. EXECUTIVE SUMMARY

In its recent NPRM on intercarrier compensation regimes, the Commission begins its reexamination of all currently regulated forms of intercarrier compensation by observing that the current system is a crazy patchwork of regulations that treat the same types of economic transactions in very different ways depending upon factors which make no essential economic difference When one carrier hands off a telephone call to another carrier, existing regulations might require that the first carrier compensate the second carrier, that the second carrier compensate the first carrier, or that neither compensate the other, all depending upon

[1]See Patrick DeGraba, ***Bill-and-keep at the Central Office as the Efficient Interconnection Regime,*** OPP Working Paper 33, December 2000 (DeGraba 2000).

[2]Reply Comments of Qwest Communications International, Inc., ***Developing a Unified Intercarrier Compensation Regime,*** CC Docket No. 01-92 (Nov. 5,2001) (Qwest Reply Comments).

economically irrelevant factors such as whether the call is viewed as local or long distance, whether the carriers are local carriers or long distance carriers, whether the carriers are wireline or wireless carriers, and whether the call ultimately terminates at an Internet service provider (ISP) or not The Commission observes that the current system creates distortions and arbitrage opportunities by treating what are essentially similar transactions in such disparate ways. These arbitrary distinctions bias technology choices, pick winners and losers in advance, and at times encourage firms to make massive investments simply to earn arbitrage profits rather than to accomplish any real productive purpose. In this NPRM, the Commission sets out toward the ambitious and laudable goal of subjecting this patchwork of regulations to a searching and thorough analysis and to replace it, to the extent possible, by a single unified regime explicitly designed to promote efficiency and competition and minimize the need for regulatory intervention as competition continues to develop.

In particular, in the NPRM and an accompanying staff paper by DeGraba 2000, the Commission suggests that bill-and-keep might provide the basis for creating such an efficient unified system Under bill-and-keep, local carriers[6] are not allowed to charge interconnecting carriers for the local carriers' own costs of originating and terminating calls within the local network Rather, they must look to their own end-users for recovering these costs. Different types of bill-and-keep regimes can be created by varying either the definition of what facilities are viewed as being local access facilities or the default responsibilities of carriers to provide

[6]In this paper I will use the term "local carrier" to refer to any carrier providing end users with a direct link to the public switched network through a loop and end office switch or the functional equivalent of such facilities. This term includes incumbent local exchange carriers, competitive wireline local exchange carriers, and providers of wireless service. I will use the term incumbent local exchange carrier (ILEC) as it is used in the Communications Act of 1934, as amended. See 47 U.S.C. § 251(h)

transport between networks. In its reply comments, Qwest suggests one modification to the basic bill-and-keep proposal described by the Commission, by suggesting that the definition of local access facilities be expanded to included tandem switches serving end offices and transport between tandem switches and end offices (when such tandems exist). Qwest describes this approach as an "edge of the network" default division of financial responsibility since this modification essentially expands the definition of local access facilities outwards to the edge of the local carrier's network.

Moving to a bill-and-keep regime offers three main advantages.[3] First, a bill-and-keep regime is significantly less regulatory than the current regime because, under bill-and-keep, there is no need to regulate termination .prices charged by non-dominant carriers. Second, certain severe regulatory arbitrage problems that occur under the current regime can be completely avoided under a bill-and-keep regime Third, under the Qwest proposal, it should be possible to reduce regulation of the transport prices that ILECs charge interconnecting carriers.

First, bill-and-keep is significantly less regulatory than the current regime because it eliminates the need to regulate termination prices charged by non-dominant carriers.[4] As will be discussed below, even in very competitive telecommunications markets where there are large numbers of competing local carriers, it will still be necessary for government to regulate the termination prices that non-dominant local carriers charge other firms, due to the terminating monopoly problem However, there is no need to regulate termination prices that non-dominant

[3] The first two advantages of bill-and-keep apply to both the DeGraba 2000 and Qwest proposals and, in fact, to almost any sensibly designed bill-and-keep regime. The third advantage applies to the Qwest proposal but not to the DeGraba 2000 proposal.

[4] As will be discussed in Section 4 1.4, a similar argument can also be made with respect to origination prices charged by non-dominant local carriers for long distance calls; these must be regulated under the current regime but could be deregulated under a bill-and-keep regime.

local carriers charge their own end users, because competition for these end users will itself control prices. Because even very good regulators will never be able to obtain sufficiently detailed, accurate, or timely information to set all prices equal to their perfectly efficient levels, regulation can never be expected to create the same incentives for efficiency that can be created by competitive markets. This is particularly true in industries such as telecommunications where technology is evolving rapidly and where there is a need for flexibility and experimentation with pricing structures and business models. And regulation is costly. Therefore, the fact a bill-and-keep regime would allow the Commission to let competition set prices that would otherwise have to be set by regulation is a significant advantage. That is crucial because, in the NPRM, the Commission states that one of its goals is to identify a system that "minimizes the need for regulatory intervention, both now and as competition continues to develop."[9]

Second, a particularly serious and pernicious arbitrage problem that arises under the CPNP regime can be completely avoided by switching to a bill-and-keep regime. To the extent that termination prices that carriers are allowed to charge other carriers are set above the actual cost of providing termination in a CPNP regime, incentives are created for CLECs to invest in facilities that allow them to serve end users such as ISPs that primarily receive calls but do not originate calls, even if the CLECs are not the lowest cost service providers. Furthermore, because these termination fees paid by the originating carrier are not passed back to end users making the calls, such high prices do not automatically sow the seeds of their own destruction by creating incentives for end users to try to avoid using ISPs served by CLECs that charge these high fees.

[9] *See* NPRM at 3.

Third, the bill-and-keep system proposed by Qwest should allow the Commission to significantly deregulate ILEC provision of transport services to interconnecting carriers. This is because the Qwest proposal relieves interconnecting carriers of the responsibility to purchase transport deep within the ILEC network in order to deliver calls to every end office of the ILEC. Instead, under the Qwest proposal, interconnecting carriers are permitted to relinquish financial responsibility for traffic at the ILEC tandem. It is much more likely that competitive alternatives will be available for the more limited amount of transport that interconnecting carriers will be required to provide under the Qwest proposal.

The remainder of this Declaration proceeds as follows. Section 3 describes the broad outlines of the Qwest proposal for implementing a bill-and-keep regime. Section 4 discusses the three main advantages of moving to such a regime. Section 5 considers the potential problems with moving to a bill-and-keep regime that have been identified by various parties in the first round of comments of this proceeding. I show in each case that these problems are either incorrect or insignificant or that simple modifications can be made to the basic bill-and-keep regime to deal with them. Finally, Section 6 draws a brief conclusion.

3. QWEST'S BILL-AND-KEEP PROPOSAL

In this section, I will describe the main features of the Qwest proposal for a bill-and-keep regime. The proposal is described in more detail in Qwest's reply comments. Although the Qwest proposal supplements, expands upon, and clarifies the DeGraba 2000 proposal in a number of ways, it is similar in broad outline to the DeGraba proposal with one main exception. This is that Qwest proposes that the definition of local access facilities (i.e., network assets whose costs must be recovered from a local carrier's own end users) be expanded to include the tandem switch serving the end office, and transport between the tandem switch and end office, in

addition to the end office and loop More specifically, Qwest proposes that, if an interconnecting carrier chooses to drop off a call at a tandem switch serving the called party's end office instead of directly at the end office, the terminating carrier would be responsible for recovering all termination costs beyond that point, including tandem switching and transport between the tandem and end office Qwest refers to this approach as an "edge of the network" default division of financial responsibility, since this modification essentially expands the definition of local access facilities outwards to the edge of the local carrier's network.

There are two main advantages of the Qwest proposal over the DeGraba 2000 proposal. First, it places less onerous default transportation obligations on CLECs (and other non-ILEC local carriers), and therefore will encourage the growth of competition in local telecommunications markets. ILECs have historically constructed hierarchical networks, where multiple end office switches connect to a tandem switch. However, many other local carriers have chosen to build "flatter" network structures with no tandems, fewer end offices, but longer loops. This means that an area that an ILEC serves with multiple end offices connecting to a single tandem will often be served by another local carrier, such as a CLEC, with a single end office The DeGraba proposal has the effect of imposing asymmetric transportation obligations on the CLEC and ILEC in such a case: The ILEC is typically required to deliver calls only to a single location in the CLEC's network while the CLEC is required to deliver calls to multiple end offices in the ILEC's network, even though both networks are serving the same area. By contrast, the Qwest proposal would reduce the transport obligation of the CLEC so that it is more symmetric to the transport obligation of the ILEC.

To the extent that the Qwest proposal reduces CLECs' costs of exchanging traffic, it would encourage the growth of the CLEC industry and therefore speed the overall growth of

competition in local telecommunications markets. In particular, the Qwest proposal, as compared to the DeGraba 2000 proposal, would reduce the extent to which an ILEC could prevent entry or induce exit of CLECs simply by refusing to negotiate efficient two-way trunking arrangements. Therefore, the Qwest proposal would reduce any potential incentives that ILECs might have to refuse to negotiate efficient transport arrangements, relative to the DeGraba proposal.

The second advantage of Qwest's proposed change to the DeGraba 2000 proposal is that it will allow the Commission to further deregulate prices that ILECs charge interconnecting carriers for transport This issue will be discussed in detail in Section 4.

4. THE MAIN ADVANTAGES OF MOVING TO A BILL-AND-KEEP REGIME

4.1 Bill-and-keep eliminates the need for regulation of termination prices charged by non-dominant carriers.

4.1.1. The terminating monopoly problem.

Among economists that study telecommunications, it is a well understood and completely accepted fact that local carriers will set termination fees too high if they are allowed to charge those fees to calling parties.[10] The reason is that the local carrier has a sort of "monopoly" with respect to the property right of being able to terminate calls to any of its end users. Therefore, the local carrier will find it profit-maximizing to raise its prices above cost in order to take advantage of this monopoly power. *So* long as end users of the local carriers care more about minimizing the prices that they pay the local carrier than about minimizing the prices that callers

[10]See the various articles and books cited below

to them pay, unregulated termination prices will be inefficiently high no matter how much **ex** ***ante*** competition there is for end users among the local carriers.

There are at least three reasons why it is reasonable to expect that consumers will care more about minimizing the prices they themselves pay than about minimizing the prices that parties calling them pay. First, unless there is some direct business relationship between the two parties or they are part of the same family unit, an end user will lose no money himself if a party calling him (or the calling party's carrier) has to pay more. Rather, the only possible negative effect on the called party is that that party may receive fewer calls, which does not capture the full cost of higher rates experienced by the calling party." Second, **as** will be discussed in more detail in section **4.1.3** below, under current institutional arrangements following largely from state regulations, even this effect generally does not exist. This is because local carriers charge termination fees to other carriers **and** these carriers generally are not allowed to flow back termination charges to their end users making the call. Therefore an end user choosing a local carrier will quite rationally predict that (under current institutional arrangements) the local carrier's higher termination prices to the calling party's carrier will NOT reduce the number of calls the end user receives. Third, even if **a** system where charges could be flowed back to calling end users were instituted, higher termination charges on calling parties would reduce the number of calls an end user receives only to the extent that calling parties had sufficiently good information to be aware of the termination charges that every different local carrier charged and

"For example, suppose a calling party reduced its calling very little in response to a price increase but instead simply spent more. The calling party would still be worse off by the extra amount it was paying, but the called party would not perceive that there was any harmful effect **of** the price rise

which local carrier each of the people they called subscribed to. Consumer information on this issue is likely to be far from perfect.

Experience in Great Britain confirms that end users do not seem to place much weight on the issue of termination charges levied on others when they choose a telephone provider. In Great Britain, wireless phone operators charge termination fees directly to the calling party. The British regulatory authority, Oftel, has found that users of mobile phones pay very little attention to the size of these termination fees when they choose their carrier and, in fact, generally do not even know what they are

> Generally, Oftel survey data . . . suggests that residential mobile phone owners are mostly driven by cost when it comes to choosing their mobile phone network. However, they appear to place very little weight on the price of calling their mobiles when they choose their mobile network. Only 15% of potential subscribers found out how much it would cost to call their mobile, and this cost was not thought to be a significant factor in their choice of a network. This survey data also suggested that even if it was a significant fact&, they might face difficulty in getting and understanding information on costs of calling mobiles.[12]

One of the first academic papers that I am aware of that described the terminating monopoly problem was by British economist Mark Armstrong, who built a model along these lines in order to explain why he thought that the British government needed to regulate the termination prices that wireless telephone companies charged to calling parties even though the market appeared to be quite competitive.[13] Armstrong was recently invited to write the chapter on network interconnection for the forthcoming ***Handbook of Telecommunications Economics,***

[12]*See* Oftel, ***Review of the Price Control on Calls to Mobiles - A Consultive Document Issued by the Director General of Telecommunications,***9-10 (February **2001)** (available at www.oftel.gov.uk/publications/mobile/ctom0201.htm) (Oftel **2001).**

[13]Mark Armstong, "Mobile Telephony in the U.K.," (September 1997), Nuffield College, Oxford.

and his analysis of the terminating monopoly problem occupies one of three major sections in his chapter. He summarizes his findings as follows.

> [W]hen a subscriber signs up with a network, that network has a monopoly over delivering calls to the subscriber, and it can extract monopoly profits from the callers to this subscriber. Even if the market for subscribers is intense, so that overall profits are eliminated in the sector, these monopoly profits - and the consequent deadweight losses - persist.[14]

In their recent book on Competition in Telecommunications, Laffont and Tirole draw the same conclusion:

> It is worth recording here the common fallacy that small players do not have market power and should therefore face no constraint on their termination charges. This fallacy results from a misunderstanding of the definition of a market. A network operator may have a small market share in terms of subscribers; yet it is still a monopolist on the calls received by its subscribers."

Furthermore, this problem is not merely theoretical. In Great Britain, when termination prices that mobile networks were allowed to charge calling parties were unregulated, networks charged high termination fees that were clearly above cost, and this forced the British government to step in and regulate these rates. In a recent statement, Oftel, the British regulatory authority, sums up the problem as follows:

> The overall effect of the calling party pays principle in the retail market is that, whereas mobile networks have an incentive to keep the price of those services required and paid for by the mobile owner at a level to attract and retain customers, they have less incentive to keep the price of calls to mobiles low because the callers cannot take their business elsewhere if dissatisfied (the caller has to use that network to reach that particular phone number) . . . Overall, Oftel's view is that the calling party pays principle results in there

[14] *See* Mark Armstrong, "The Theory of Access Pricing and Interconnection," in ***The Handbook of Telecommunications Economics,*** North Holland (forthcoming 2001), section 3, at 40 of manuscript version dated February **2001.**

[15] Jean-Jacques Laffont and Jean Tirole, ***Competition in Telecommunications,*** MIT Press, Cambridge, 2000, at 186 (emphasis in original).

> being limited incentive for the [wireless providers] to reduce charges to the competitive level; rather there is an incentive for [wireless providers] to keep them high.[16]

As the above Oftel quote explains, the source of the problem when local carriers are allowed to charge terminating prices to people other than their own end users is that the person choosing the local carrier is NOT the person paying the termination prices. Therefore, termination prices will not play a significant enough role in the end user's selection of a local carrier, and termination prices will be inefficiently high. This problem obviously does not apply if the end user himself is paying the termination charges, and this is why there is no need to regulate termination prices that local carriers levy on their own end users. In this case, the person choosing the local carrier is the person paying the termination price, so competition will result in termination prices being 'competed down to cost.

4.1.2. When carriers cannot pass through terminating charges to calling parties, the terminating monopoly problem is exacerbated.

It is obvious that the terminating monopoly problem grows even more severe if local carriers are allowed to charge terminating prices to other carriers and these other carriers are not allowed to pass through these terminating prices to their own end users In such a case, callers view the terminating price as zero no matter how high it gets, and therefore callers' demand to place calls remains high even if the local carrier raises prices. This creates an extraordinarily high incentive for local carriers to raise termination prices.

This is precisely the situation that exists for both long distance and local calls. For the case of long distance calls, existing pricing regulations require IXCs to charge an average rate for all their calls independent of the termination charges that are actually levied for a particular call "

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[16] *See* Oftel (2001) at 9.

[17] *See* 47 U.S.C. § 254(g).

With respect to long distance termination prices, local carriers are therefore in the enviable position that IXCs that provide services nationwide such as AT&T will continue to charge exactly the same prices to reach their end users regardless of how high the local carrier raises its termination prices. Until very recently, the termination prices that CLECs charged IXCs were completely unregulated The Commission was forced to begin regulating these prices precisely because such carriers had no incentive to keep these prices low.[11]

For the case of local calls, state regulatory commissions, generally speaking, require ILECs to charge a flat rate for all local calls. Therefore, end users of the ILEC calling end users of another local carrier view the incremental cost of the call to be zero regardless of how high the other local carrier raises its termination prices. Since the termination prices that local carriers are allowed to charge ILECs have always been regulated, we have not observed the same extraordinarily high prices that occurred in the previously unregulated market for CLEC termination of long distance calls But precisely the same logic applies, and we can be sure that a local carrier would have an extremely strong incentive to raise its local termination rates charged to other carriers to very high levels if these rates were unregulated. Therefore there will be a permanent need for regulation of termination prices so long as local carriers are allowed to charge these prices to other carriers rather than their own end users.

> 4.1.3. When interexchange carriers cannot pass through originating access charges to their end users, then originating access charges by non-dominant carriers must be regulated.

The same type of problem described above for the case of terminating fees also exists for originating fees That is, if a local carrier (even if non-dominant) is allowed to charge

[11] *Reform of Access Charges Imposed by Competitive Local Exchange Carriers,* Seventh Report and Order and Further Notice of Proposed Rulemaking, CC Docket No. 96-262, FCC 01-146 (rel. Apr 27,2001) (*CLEC Access Charge Order).*

origination fees to an interconnecting carrier and the interconnecting carrier is not allowed to flow back these charges to the calling party, the carrier will have an incentive to raise these origination fees above the competitive level. This is precisely the situation that exists with respect to originating long distance access charges. The same regulation that requires IXCs to charge an average termination fee (as part of their long distance rates) across all their end users also requires them to charge an average origination fee across all of their end users.[9] Therefore, if a particular local carrier raises the originating access charges that it levies on IXCs, IXCs are not allowed to respond by raising the long distance prices they charge to end users of that particular local carrier. Rather, the IXCs must continue to charge an average rate that reflects the origination costs they experience across all their end users. Therefore, in effect, a small local carrier can raise its originating access charges without affecting the prices its end users pay for long distance service at all This, of course, gives the local carrier a powerful incentive to raise originating access charges.

Of course, no such incentive exists under a bill-and-keep regime because, in this case, the local carrier charges origination fees directly to its own end users. Therefore, so long as the local carrier is non-dominant, competition among local carriers for end users will control these prices

4.1.4. The costs of regulating non-dominant carriers.

It is impossible for regulation to set all prices equal to correctly calculated forward looking costs because the task is simply too complicated and requires too much information. The job of the regulator is not simply to discover the one correct per-minute rate that all carriers should charge for all types of traffic for all time. The constant introduction of new products and

[9] *See* 47 U.S.C. § 254(g).

technologies means that underlying cost conditions are always changing and that the regulatory system must be constantly responding to new issues and problems To complicate matters further, the cost of end office switching is in many ways a **peak** load cost: *i.e.*, the main cost is building capacity and there must be enough capacity to meet peak demand. In such cases, it is likely that even more complex pricing schedules using time-of-day pricing are likely to be efficient. The chance of even very good regulators being able to get this even more complex problem right grows even smaller

4.2 Bill-and-keep eliminates severe arbitrage problems that occur under CPNP.

Recent events surrounding the issue of ISP-bound traffic[m] illustrate a particularly serious and pernicious arbitrage problem that arises under the CPNP system that could be completely eliminated by switching to a bill-and-keep regime. The problem occurs when local carriers are able to find a class of end users that primarily receive calls and the per-minute cost to the local carrier of terminating the traffic is less than the regulated termination rate set by government. In such a case, these end users will become virtual "money pumps" for local carriers since they are able to earn a profit on every minute of incoming traffic and this is not counterbalanced by payments for traffic in the opposite direction.

In retrospect, it now appears that the termination rates that CLECs were allowed to charge ILECs for terminating ISP-bound traffic were well above their actual cost of providing termination. This created an incentive for CLECs to invest in facilities that allowed them to

[m] *See Implementation of the Local Competition Provisions in the Telecommunications Act of 1996 and Intercarrier Compensation for ISP-Bound Traffic*, Order on Remand and Report and Order, CC Docket Nos. 96-98 and 99-68, FCC 01-131 (rel. April 27, 2001), for the Commission's most recent order on this subject and a history of events leading up to the current situation

serve ISPs, not because they were necessarily more efficient providers of service to ISPs, but because government regulations allowed them to earn a price well above cost for serving ISPs. Because the existing regulatory structure did not allow ILECs to pass these termination charges back through to their own end users, the fact that CLECs charged high termination prices had no effect at all on the demand of the ILECs' end users for the services of ISPs served by CLECs.

Years after the problem became apparent, and years after CLECs had invested large amounts of money to serve and attract this group of end users, the regulatory process finally ground into action, and the Commission recently decided to lower the termination rate that local carriers are allowed to charge for ISP-bound traffic. While it appears that this particular arbitrage problem created by this particular class of traffic may now have been substantially dealt with, massive distortions in business investment decisions occurred in the meantime.

Furthermore, new pricing problems will likely arise in the near future and may cause equally severe problems before government is able to respond to them. One new problem on the horizon concerns paging companies. Under Commission regulations, paging companies are viewed as local carriers that only terminate traffic Therefore, under the existing CPNP regime, they are entitled to charge other local carriers termination fees. The cost of terminating traffic for paging companies is considerably less than the normal termination price that regular local carriers are allowed to charge. Thus, if paging companies were allowed to charge this regular price, every paging end user would become a "money pump" for the paging company Paging companies would have an incentive to pay people to become their end users and to pay other people to page the first group of people. The Commission was aware of this problem and dealt with it a number of years ago by specifying that paging companies would only be allowed *to*

charge a special extremely low terminating price.[21] **Based** on conversations with Qwest staff, I have become aware that instances are now arising where paging companies are attempting to avoid this regulation by becoming end users of CLECs. Under this new arrangement, paging traffic runs from the end users of the ILEC to end users of the paging company through the CLEC, and the CLEC is attempting to charge the regular high termination price for this traffic. Once again, even if the Commission eventually is able to respond to this arbitrage opportunity by making a one-time piecemeal adjustment to the regulated price of termination for one more class of traffic, there will be dislocations of investment in the meantime. Furthermore, another new arbitrage opportunity is likely to come along as soon **as** this one is solved.

4.3 Bill-and-keep will allow further deregulation of transport prices that ILECs charge to other carriers.

Another advantage of bill-and-keep is that it will allow further deregulation of transport prices that ILECs charge interconnecting carriers To understand the reason for this, one may view the market for intra-LATA transport purchased by interconnecting carriers **as** being divided into two segments· (i) transport between the ILEC's tandem switches and subtending local switches, and (ii) transport from other local carriers' end offices to the ILEC tandem. Alternate sources of supply to the ILEC are much more likely to exist for market segment (ii) than market segment (i), because the higher levels of traffic and greater number of interconnecting carriers at tandems have generally encouraged more alternate providers to build transport facilities to tandems. Under a properly structured bill-and-keep regime, carriers are no longer required to purchase items in market segment (i) from the ILEC in **order to exchange** traffic with **the JLEC.**

[21] ***See Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Interconnection Between Local Exchange Carriers and Commercial Mobile Radio Service Providers,*** CC Dockets No. 96-98,95185, **11** FCC Rcd **15499,** 16043-44 ¶¶ 1092-93 (1996).

Instead, the ILEC directly sells these services to end users under prices that are regulated as part of end user charges so long as the ILEC is deemed to be dominant. However, interconnecting carriers will still continue to purchase items in the second market segment from the ILEC. Because the ILEC is less likely to have market power in this segment due to the comparatively greater availability of transport from IXCs, other LECs, CAPs, etc., the Commission may deem it more appropriate to deregulate ILEC provision of transport to interconnecting carriers. Therefore the advantage of moving to a bill-and-keep regime is that, by separating market segment (i) from market segment (ii), it removes any obstacles to deregulation of market segment (ii)

5. ARGUMENTS RAISED BY OPPONENTS OF BILL-AND-KEEP ARE INCORRECT, INSIGNIFICANT, OR PROPERLY ADDRESSED THROUGH SIMPLE SAFEGUARDS AND RULES

5.1 It is preferable to replace regulation with competition where possible instead of merely attempting to more accurately set regulated prices equal to forward-looking cost.

Janus Ordover and Robert Willig, on behalf of AT&T, argue that most of the arbitrage problems that occur under the CPNP system could be solved if regulators were able to do a perfect job of always setting all regulated prices equal to correctly defined forward-looking cost [22] I think that Ordover and Willig are basically correct that, in theory, if regulators had enough information, time, and knowledge to set all prices equal to their theoretically perfect values, regulation would then work quite well. In fact, since the "perfect values" for prices are by definition the values that competitive markets would set, the statement that "perfect" regulation is just as good as competitive markets is really more of a definition of what is meant by perfect regulation than a statement with any real economic content.

[22] "Janus Ordover and Robert Willig, August 20,2001, "Declaration of Janus A Ordover and Robert D Willig on Behalf of AT&T Corp.," (Ordover and Willig), section VI.

I am a bit puzzled as to why Ordover and Willig think that the observation that CPNP would work quite well if it could be paired with a theoretically perfect regulatory process creates a justification for CPNP. As I have stated above, one of the main advantages of moving to a bill-and-keep regime over a CPNP regime is that it reduces the need for regulation. In particular, there is no need to regulate termination fees charged by non-dominant carriers under bill-and-keep, but these fees must be regulated under CPNP. I agree with Ordover and Willig that if regulation could always produce theoretically perfect prices, then there would be no real need to replace regulation by competition where this is possible. My main point is that it is impossible for regulation to achieve this ideal of theoretical perfection and that it therefore makes sense to substitute competition for regulation when this is possible. Therefore, while I agree that CPNP would work fairly well if regulation could always set theoretically perfect prices, I disagree strongly that this statement somehow provides a justification for CPNP.

In other parts of their declaration, Ordover and Willig in fact acknowledge precisely this point - that it is not realistic to expect that regulation will always get prices perfectly correct. Their declaration includes the following two statements:

> We recognize that it is no easy or error-free task for regulators to estimate costs and set rates The many "bumps in the road" to cost-based reciprocal compensation rates illustrate the difficulties regulators face in a world of imperfect and asymmetric information We are therefore entirely sympathetic to the desire to find a regime that can remedy existing market distortion but that would not require rate regulation."
>
> We recognize, of course, that setting cost-based rates that replicate competitive market outcomes is no simple task, and we are strong proponents of a first principle of economic regulation that such ratemaking should not even be attempted if markets and competition can be relied upon to accomplish these goals instead.[24]

[23]Ordover and Willig at 9.

[24]Ordover and Willig at 6.

Therefore even Ordover and Willig seem to acknowledge that it is highly desirable to implement policies that allow competition to set prices rather than regulation when this is possible. Replacing the current CPNP regime with a bill-and-keep regime accomplishes this result.

5.2 Bill-and-keep is deregulatory because it allows deregulation of termination prices charged by non-dominant local carriers.

Both Ordover and Willig,[25] and DeGraba 2001 in his paper filed on behalf of WorldCom,[26] make the argument that bill-and-keep is no more deregulatory than CPNP because there will be an equal need to regulate dominant ILECs under either regime. As I have stated many times in this paper, the main reason that bill-and-keep is more deregulatory than CPNP is NOT principally because it allows less regulation of ILECs (although it accomplishes that as well, as discussed in section 4.3), but rather because it allows less regulation of non-dominant local carriers. Therefore, the argument that there is an equal need to regulate the ILEC under both regimes does nothing to contradict or weaken the argument of this paper that bill-and-keep is less regulatory because it allows for considerably less regulatory oversight of non-dominant local carriers. The significant regulatory distortions and arbitrage opportunities that I have described in this paper flow from the fact that regulation has failed to set termination prices charged by non-dominant carriers at the correct levels. Moving to a bill-and-keep regime will rectify these serious problems because competition will then be able to determine these prices.

Furthermore, moving to a bill-and-keep regime will reduce regulatory uncertainty by creating a more stable regulatory structure that does not need to constantly change as new

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[25] *See* Ordover and Willig, section III.

[26] *See* Patrick DeGraba, August 20,2001, "Implementing Bill and Keep Intercarrier Compensation When Incumbent LECs Have Market Power," Declaration of Patrick DeGraba, filed on behalf of WorldCom (DeGraba 2001) at 5.

regulatory arbitrage opportunities created by the CPNP system become apparent and are dealt with on a piecemeal basis This reduction in regulatory uncertainty will itself create a more favorable environment for local carriers to compete in, thereby increasing investment in such carriers

53 Bill-and-keep will not increase the ability of incumbent ILECs to discriminate against unaffiliated IXCs by exercising control over the transport of originating traffic.

The argument that a bill-and-keep regime might give ILECs an extra opportunity to disadvantage unaffiliated IXCs is made most completely by DeGraba **2001** in a paper filed on behalf of WorldCom DeGraba 2001 correctly observes that, under the DeGraba 2000 proposal, the ILEC would have the default financial responsibility to transport originating traffic between the **ILEC** end office and the IXC POP. This is also true under the Qwest proposal. DeGraba 2001 **is** also correct in noting that this would represent a change from the current regime, under which the IXC has default financial responsibility for both directions of traffic between the IXC POP and the ILEC end office. DeGraba **2001** suggests that this change in responsibility could raise new problems for **IXCs** under the following scenario, which I will call the DeGraba 2001 Scenario

The DeGraba 2001 Scenario

Suppose that the end office of an ILEC and the POP of an IXC are currently connected by a two-way trunk owned by the IXC and that this is the most efficient interconnection method Now suppose that, after the implementation of bill-and-keep, the ILEC insists on routing originating traffic through the ILEC tandem and transporting the traffic itself to the IXC POP using its own facilities. It then charges the IXC's end users for this service. This creates three problems for the IXC, according to DeGraba 2001 First, the ILEC is able to block originating traffic in ways that neither the IXC nor the regulator can monitor or prevent, causing the IXC's service quality to deteriorate. Second, the IXC has a more difficult time being competitive on price because the ILEC now charges the IXC's end users high prices for origination, reflecting the (inefficient) one-way transport route it insists on using. Third, the IXC now has excess transport

capacity which it cannot sell or lease because the ILEC refuses to use it and there is no other use for this transport capacity.

A bill-and-keep regime is unlikely to create significant problems of the sort DeGraba 2001 describes First, with respect to the issue of call blocking, based on conversations I have had with Qwest staff, I believe that the service quality concern would be largely resolved by simple safeguards that required the ILEC to treat traffic bound for unaffiliated IXCs in a nondiscriminatory fashion relative to traffic bound for its own long distance affiliate. For example, the ILEC could be required to provide direct trunking on a non-discriminatory basis. As another example, for long distance traffic taken through the tandem, the ILEC could be required to transport traffic of its own affiliate on the same trunks that it uses to transport the overflow traffic of other IXCs so all traffic would be subject to the same rate of call-blocking. In particular, even when a direct trunk exists to *carry* traffic from a particular end office, ovefflow traffic is typically carried on non-dedicated trunks that flow through the tandem; a natural and simple safeguard would be to require the ILEC to carry all such overflow traffic (including the overflow traffic of its own affiliate) on the same trunks

Second, with respect to the issue of raising the IXC's costs, once again, safeguards requiring the ILEC to treat all IXCs (including its own affiliate) in a non-discriminatory fashion would largely deal with this problem. Furthermore, DeGraba 2001's concern would not be significant even in the absence of such safeguards. DeGraba 2001's argument assumes that the ILEC will be able to pass along all of the costs of its inefficient transport choice to IXC end users. (This is why costs to IXC end users are raised.) That is, DeGraba 2001 assumes that the ILEC will be automatically allowed to pass through any increases in transport costs that it incurs by purposely choosing an inefficient transport method. If an ILEC is subject to rate-of-return regulation and if the ILEC incurs more costs, it would have a basis to argue that rates should be

raised to recover these costs However, even in a pure rate-of-return system, an ILEC would have to justify that these costs are reasonable and necessary, and this might be hard to do in a situation where the ILEC is purposely not using an already-constructed two way trunk that is generally acknowledged to be the most efficient method of transport. More important, recovery of interstate costs by larger ILECs is currently regulated under a price cap regime that does not automatically allow pass-through of costs. That is, under the regulatory regime actually in existence for these carriers, the ILEC is not allowed to raise its prices if its costs go up; conversely it is not required to lower its prices if its costs go down. Therefore, assuming that the Commission does not make some radical break with its previous policies, the prices that larger ILECs will be allowed to charge end users for transport will be regulated according to some sort of price cap system In particular, this means that ILECs will not be able to raise their prices simply by switching to more inefficient transport methods.

Third, with respect to the stranded assets issue, any sudden excess supply of capacity on the part of an IXC will be matched by an equal excess demand for capacity on the part of the ILEC that now has the responsibility to transport the traffic The same amount of traffic will still need to be transported after the change, and the same amount of capacity will still exist to transport it Therefore, there should be a resale market for the IXC's excess capacity if the IXC turns out to have a significant amount of such excess capacity

5.4 Bill-and-keep will not increase the ability of incumbent LECs to engage in price discrimination against unaffiliated IXCs.

DeGraba 2001 discusses extensively the argument that bill-and-keep will enable ILECs to engage in price discrimination against unaffiliated IXCs.[27] He begins with an example where

[27]DeGraba 2001, section 3.

an ILEC disadvantages a rival IXC by charging users of its own long distance service a lower per-minute rate for local origination than it charges users of rival IXCs' long distance services However, he then immediately acknowledges that a simple rule stating that the ILEC is not allowed to discriminate in this fashion would solve this problem and that the Commission would surely pass such a rule.[21] I agree with this conclusion.

DeGraba 2001 then proceeds to a more subtle example of discrimination. He considers a case where an ILEC offers to sell a "bucket" of long distance minutes for a flat fee to end users that use the ILEC's own long distance service but continues to charge a per-minute fee to end users for local origination that use rival IXCs' services. He correctly observes that it will be more difficult to make some unambiguous determination of whether or not such a scheme is discriminatory and concludes that situations like this could make it difficult for regulators to determine whether or not the ILEC is discriminating against rival IXCs. While I think this observation is generally correct, I also think that it is completely irrelevant to the issue of comparing a bill-and-keep regime with a CPNP regime. The reason is that exactly the same sorts of "fuzzy" situations could arise under a CPNP system. For example, under a CPNP system an ILEC could choose to offer its own end users a "bucket" of long distance minutes and simultaneously charge a per minute access rate to rival IXCs. Exactly the same difficulties with determining whether or not such a system is discriminatory would arise. More generally, any non-discrimination requirement enforced in a CPNP system by requiring the ILEC to charge the same access fees to all carriers could be equally well enforced in a bill-and-keep system by requiring the ILEC to provide all end users the same access fee options, irrespective of their choice of IXC.

[21]DeGraba 2001 at 20.

5.5 Bill-and-keep will not create worse incentives for efficient use of the telephone network.

A number of the papers submitted by economists in the first round of this proceeding attempt to argue that having the calling party pay for all of the costs of a call will cause more efficient usage of the phone system than having the called party pay for at least a share of the costs of a call, as occurs under bill-and-keep.*

It is useful to begin by recalling what DeGraba 2000's main point is on this issue. It is NOT that a bill-and-keep system will definitely induce superior decisions regarding short run use of the telephone network than will CPNP. Rather, his point is much more modest than this; it is simply that no clear conclusions can be drawn in this regard and that the significant advantages that bill-and-keep exhibits in other areas therefore justify its adoption.

More specifically, his point is that, in general, good incentives for short run use of the telephone network will be created when the costs of making phone calls are allocated in proportion to the average relative benefits of telephone calls. Under a CPNP system, the calling party pays for 100 percent of the call. Under a bill-and-keep regime, the calling party pays for less than 100 percent of the call but more than 50 percent of the call. (The precise share depends on the nature of the transport rule that is chosen.) DeGraba 2000's point is simply that recitations of examples where calling parties generally receive more benefits than called parties provide no scientific or empirical basis for predicting that one of these two regimes will create better incentives than the other, For example, suppose we viewed a recitation of examples as

*"*See* Ordover and Willig, section IV; Lee Selwyn and Scott Lundquist, "Efficient Intercarrier Compensation Mechanisms for the Emerging Competitive Environment," August 2001, paper submitted on behalf of Focal, Pac-West, RCN, and US LEC (Selwyn and Lundquist) at 44-47; and Joseph Farrell and Benjamin Hermalin, "Analysis of Central Office Bill and Keep," August 2001, paper submitted of behalf of Time Warner, (Farrell and Hermalin), section V.

sufficient evidence to conclude that calling parties generally receive 75 percent of the benefits of all calls (Of course, even this would represent quite a heroic conclusion to draw based only on a list of examples.) Suppose also that we were able to determine that a specific bill-and-keep regime under consideration would have calling parties pay for 60 percent of the costs of making calls. It still might be the case that bill-and-keep produced superior results to CPNP since the share of cost borne by callers under bill-and-keep (60 percent) is closer to 75 percent than is the share of benefits borne by callers under CPNP (100 percent). It certainly does not seem obvious that CPNP would be the superior regime.

For similar reasons, bill-and-keep is at least as consistent as CPNP with principles of cost causation. CPNP arbitrarily allocates all cost-recovery to the calling party, even though the called party contributes to many of those costs by accepting the call, and even though its carrier makes cost-consequential decisions about network technology and design The argument that the calling party should be required to pay for all of the cost of a call because it is the sole "causer" of the call is therefore fallacious. After the first second of a telephone call, the called party is as much a causer of the call as is the calling party, since either can terminate the call if it wishes. Ordover and Willig respond that, to the extent that CPNP incorrectly allocates the cost of calls, parties could make up for this deficiency by agreeing to take turns calling one another or perhaps even exchanging dollar payments. But this obviously isn't always possible and, furthermore, is a clumsy and awkward mechanism at best.

Farrell and Hermalin make a different argument.[30] Based on a more general model that generalizes some of the assumptions implicitly made by DeGraba 2000, they show that a more complex analysis may be required to determine the optimal intercarrier compensation rule and

[30]Farrell and Hermalin, section V.

that considerations similar to those that enter Ramsey pricing may need to be taken into account. They use their analysis to argue that DeGraba 2000's simple example, where splitting costs evenly between the parties creates perfectly optimal incentives, relies on special assumptions. It is true that their analysis identifies factors that DeGraba 2000 did not consider. However, far from nullifying the main point of DeGraba 2000, their analysis strengthens it. By identifying a range of new complex issues that need to be taken into account, Farrell and Hermalin make it even more difficult to develop any unambiguous sense of whether or not one of the regimes would create better incentives for short run use of the network than the other.

Furthermore, proponents of CPNP have failed to notice the critical fact that the model which they are using to support the claim that CPNP creates better incentives than bill-and-keep actually differs fundamentally from the way that CPNP works in practice, at least for the case of local calls. The model that proponents analyze is really a model of Calling ***Party*** Pays, not Calling ***Party's Network*** Pays. That is, the result that is shown is that when callers receive all of the benefit of calls, it would be optimal to charge ***callers*** a termination price equal to the incremental price of making a call However, as has been discussed extensively above,[31] for the case of local calls from the end user of an ILEC to the end user of a local carrier, in most jurisdictions callers are charged a completely flat rate by the ILEC regardless of whether the ILEC is asked to pay termination charges to the local carrier. Therefore, in the case of local calls, given current institutional arrangements, no incentives are created for the calling party to consider the incremental cost of a call when the local carrier is allowed to charge terminating rates to the ILEC. This is because the costs are not passed on to the calling party and therefore

[31]See Section 4.1.3.

simply disappear into a "black hole" where neither the caller nor the receiver pays any attention to them

5.6 Bill-and-keep will not create incentives for CLECs to inefficiently specialize in originating traffic.

Farrell and Hermalin[32] suggest that a bill-and-keep regime might remove a CLEC's incentive to specialize inefficiently in serving end users that primarily receive calls (such as ISPs) only at the cost of giving CLECs new incentives to specialize inefficiently in serving users that primarily originate calls They acknowledge, however, that bill-and-keep would not create such a reverse problem if ILECs were allowed to charge prices to their own end users that appropriately reflect the costs of providing these end users with service in a bill-and-keep environment, Rather, their argument depends on the assumptions that (i) ILECs levy incremental charges on originators of local calls to cover both the incremental cost of originating and terminating calls; and (ii) they will continue to be required to do this after the adoption of bill-and-keep "

These assumptions are both invalid With respect to assumption (i), ILECs generally do not levy any incremental charges on end users for making or receiving purely local calls. That is, a single flat-rated fee is levied to cover these costs Bill-and-keep does not produce any

[32]Farrell and Hermalin at 6.

[33]The argument is as follows: Suppose that the ILEC charged the calling party a per-minute fee to cover the incremental costs of both originating and terminating a local call and charged the called party no per-minute fee. Under a CPNP system, the CLEC would have no incentive to try to attract end users that primarily originate calls because it would have to pay termination fees to the ILEC. However, under a bill-and-keep system, it would not have to pay termination fees to the ILEC and therefore, according to the argument, would have an incentive to try to attract end users that primarily originate calls because it would not have to charge for termination as well

systematic incentive for CLECs to specialize in originating traffic when ILECs use flat-rated charges

With respect to assumption (ii), Farrell and Hermalin suggest that the fact that ILECs did not have sufficient pricing flexibility to counter CLEC efforts to attract ISPs under the CPNP regime suggests that they will not have sufficient pricing flexibility to counter the efforts of CLECs to attract end users that primarily originate traffic under a bill-and-keep regime. However, this comparison is clearly inapt. In the case of ISP-bound traffic, CLECs were able to make large profits even if they charged **ISPs** a price of zero. Therefore, in order to compete with CLECs, ILECs would have needed the flexibility to pay ISPs large "bribes" in order to induce them to agree to accept service In the scenario described by Hermalin and Katz, where the adoption of bill-and-keep gives CLECs the incentive inefficiently to attract end users that only originate calls, all that the ILEC would have to do to counter these efforts would be to charge incremental origination prices no greater than incremental origination costs. That is, the ILEC would need only the flexibility to adjust prices closer to costs. In my opinion, the fact that ILECs did not have the flexibility to offer large "bribes" to selected end users does not shed much light on the question of whether or not they would have the flexibility to adjust prices closer to costs

Selwyn and Lundquist make an argument that is similar to that of Farrell and Hermalin.[34] They argue that current pricing practices are incompatible with bill-and-keep and would have to be changed radically if bill-and-keep were adopted. The same rebuttals apply to this argument as well. Namely, the assumption that ILECs generally charge calling parties a per minute fee to cover the incremental costs of both originating and terminating local calls is simply false.

[34]Selwyn and Lundquist at 39-43.

Furthermore, even if this assumption were true in some cases, the type of adjustments in prices that would be required under a bill-and-keep regime simply involve moving prices closer to costs and would not be difficult to implement.

5.7 To the extent that CPNP reduces unwanted phone calls, it will also reduce wanted phone calls.

Ordover and Willig[35] observe that (i) some phone calls that people receive, such as solicitations during the dinner hour, are unwanted; (ii) parties pay higher prices for making calls under a CPNP system than under a bill-and-keep system; and (iii) since the end users that originate unwanted calls might be expected to make fewer of these calls if they had to pay more to make them, fewer unwanted calls are made under a CPNP system than would be made under a bill-and-keep system.

However, there is no reason to believe that raising the price of making a telephone call will have a substantially larger effect on unwanted calls than wanted calls. That is, Ordover and Willig's reasoning about the relative effects of CPNP vs. bill-and-keep on the number of phone calls that are made applies equally well to all phone calls. Ordover and Willig are essentially therefore simply making the trivial observation that having a policy that makes phone calls more expensive will result in fewer phone calls being made. In such circumstances, there are fewer "bad" phone calls made, but there also are fewer "good" phone calls made. Ordover and Willig certainly provide no basis for drawing the conclusion that having a policy that makes phone calls more expensive for calling parties is good because the social benefits from the reduction in "bad" phone calls is greater than the social costs from the reduction in "good" phone calls. Taking Ordover and Willig's reasoning to its logical extreme demonstrates the fallacy in their argument.

[35] Ordover and Willig at 13-18.

According to Ordover and Willig's reasoning, simply shutting the telephone system down entirely would be an even more desirable policy choice than adopting CPNP because this would entirely eliminate all unwanted phone calls. Of course, this reasoning ignores the "side effect" that all desirable phone calls would also be eliminated.

In any event, if the number of unwanted phone calls were a concern, it would be more appropriate for the Commission to take additional policy actions that specifically reduce unwanted phone calls, rather than policy actions that reduce all phone calls. For example, the Commission already restricts telemarketing calls in certain circumstances and permits called parties to ask to be placed on a "no call" list.[36]

6. CONCLUSION

If intercarrier compensation charges were determined under a bill-and-keep regime, then carriers would be responsible for recovering their origination and termination charges from their own end users instead of from other carriers. A key advantage of moving to such a system is that it removes the need to regulate termination prices charged by non-dominant carriers and thereby removes all of the possibilities for mistakes, distortions, and arbitrage opportunities that regulation can cause. An appropriately designed bill-and-keep system is therefore superior to a CPNP system The bill-and-keep system proposed by Qwest improves upon the system proposed by DeGraba 2000 and would therefore be a particularly desirable system for the Commission to consider adopting

[36] ***See*** Qwest Reply Comments at 18

APPENDIX

Curriculum Vitae of William P. Rogerson

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